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Abstract

Purpose: This study examined the impact of infrastructure financing on the successful implementation of public capital projects under Kenya's Vision 2030. It specifically focused on the mediating influence of external socio-economic and political factors and aimed to identify the extent to which these variables influence project success.

Materials and Methods: A positivistic approach was adopted, utilizing quantitative data and hypothesis testing to generate conclusions. The study employed a descriptive cross-sectional research design to analyze high-impact infrastructure projects in the roads, energy, and water & sanitation sectors over the past decade under Kenya's Medium-Term Plans (MTP I and MTP II). Data were collected from 313 projects, including 220 in roads, 20 in power and energy, and 73 in water and sanitation, achieving a response rate of 83.07%. Descriptive statistics, multiple linear regression, and factor analysis were used to explore relationships between infrastructure financing, project success, and external environment factors.

Findings: The study revealed that infrastructure financing significantly influenced the success of public capital project implementation, while the external socio-economic and political environment mediated this relationship. However, these factors alone did not sufficiently explain cost and time overruns, suggesting that other unexplored variables contribute to these project inefficiencies.

Implications to Theory, Practice and Policy: The findings imply that existing theories on project success must consider additional variables beyond financing and external environments to explain cost and time overruns. In practice, implementing agencies should enhance internal assessments and risk management, particularly for projects financed through public-private partnerships (PPPs). Policymakers, including the Government of Kenya, should prioritize governance frameworks and robust risk management strategies to mitigate external environmental risks, thereby improving the success rate of Vision 2030 projects.

Keywords: *Infrastructure Financing, Kenya Vision 2030, Public Capital Projects, Cost Overruns, External Environment*

1.0 INTRODUCTION

Kenya Vision 2030 is the blueprint to transform Kenya into a middle-income economy (GoK, 2008). Successful development of capital projects is one of the major factors, and therefore infrastructure financing is expected to play a critical role in the overall achievement of the country's vision. According to the World Bank (2015), for a country to achieve high levels of economic development, it must be in a position to create jobs, increase its products' competitiveness, and sustain high economic growth, of which infrastructure is a major driver. Research also shows that China's sustained economic growth in the 1990s, averaging more than 10 percent, was enabled by high levels of investment in successful infrastructure projects (Sahoo, Dash, & Nataraj, 2010).

Studies have shown that unsuccessful capital project development is often due to high cost and time extensions, project abandonment, and unwarranted high maintenance costs. These challenges are not solely caused by infrastructure financing but are influenced by other factors such as implementation capacity and external socio-economic and political environments (Flyvbjerg, Bruzelius & Rothengatter, 2003; Nyasetia, Mbabazize, Shukla & Wanderi, 2016). For instance, Flyvbjerg et al. (2003), in a study covering 208 projects in 14 countries across five continents, found cost and time overruns to be persistent problems caused by construction delays, abandonment, and poor workmanship. Musa, Amirudin, Sofield, and Musa (2015) similarly highlighted the role of political, economic, and social environmental factors in influencing the success of public housing projects in Nigeria. Babatunde (2024) postulates that external factors such as politics, interest rates, inflation, weather conditions, and public perception significantly influence infrastructure financing and the delivery of public capital projects. Similarly, Babatunde, Perera, Udeaja, and Zhou (2014) emphasized that strong financial packages, implementing agency commitment, and an enabling external environment—including legislation and economic stability—are critical for successful infrastructure projects.

Therefore, for Kenya to achieve the goals of Vision 2030 public capital projects, infrastructure financing alone is not sufficient; external environmental factors, including governance and risk management practices, play a significant role in project success. Gudiené, Banaitis, Banaitiené, & Lopes (2013) define external environments as positive or negative factors beyond the control of implementing agencies, which, if not well-managed, can influence project success. Belassi and Tukel (1996) identify socio-economic and political factors as critical components of the external environment. Zhang (2005) highlights the importance of stable political systems, efficient financial markets, and enabling legislation in the success of Public-Private Partnerships (PPPs). Similarly, Li, Akintoye, Edwards, and Hardcastle (2005) associate the success of PPP construction projects with factors such as enabling governance frameworks, government financial support, a stable economic environment, and an effective political climate.

Despite significant infrastructure budgets, Kenya's infrastructure contribution to GDP remains lower than the average for middle-income economies in Africa (Briceño-Garmendia & Shkaratan, 2011). Over the last decade, Kenya has consistently allocated over 30 percent of its national budget to infrastructure, yet this has only contributed 0.5 percent annually to GDP growth, thereby widening the infrastructure gap. The World Bank (2015) estimates that Kenya would need over US $4 billion annually over the next decade to close this gap. Studies by Misiko & Nyabaro (2015), Okero (2011), and Kagiri (2006) confirm that the growing infrastructure gap is caused not by

inadequate financing but by issues such as market failures, cost and time overruns, and project abandonment.

Thesis Statement: This study investigates the role of external socio-economic and political environmental factors—specifically governance, risk management, community acceptance, political influences, and weather—on the successful implementation of Vision 2030 public capital projects in Kenya. The study aims to identify how these factors mediate infrastructure financing outcomes and provide recommendations for improving institutional governance and risk management practices to ensure project success.

The research highlights that while financial capacity and implementation efficiency are essential, the external environment—if not well-managed—poses significant risks to infrastructure project success. Delays and cost escalations in infrastructure development are often attributed to poor governance, political interferences, inadequate technical capacity, and external shocks like weather events (Odhiambo & Wamuyu, 2021; Misiko & Nyabaro, 2015; Okero, 2011). Addressing these challenges through governance reforms and enhanced risk management systems is vital to ensuring Kenya achieves its Vision 2030 objectives.

The aim of this study is to investigate the influence of the external environment on the successful delivery of public infrastructure projects. By applying theoretical frameworks such as the Pecking Order Theory (Myers & Majluf, 1984; Jensen & Meckling, 1976), which explains investor preferences in funding decisions, and the Chaos Theory (Lorenz, 1963), which illustrates how deterministic relationships can produce unpredictable outcomes, this study explores the efficiency of funds disbursement, community acceptance, political influences, and weather-related factors.

The study contributes to both practice and theory by offering practical recommendations for policymakers and development practitioners to strengthen institutional governance and risk management frameworks. This will optimize Kenya's infrastructure financing strategies, improve project implementation efficiency, and support sustainable economic development. Furthermore, the findings provide a broader understanding of infrastructure development challenges in low- and middle-income countries, offering lessons applicable to other developing economies facing similar issues.

2.0 LITERATURE REVIEW

Okero (2011) conducted a study using a descriptive survey design to establish factors affecting the implementation of LATF infrastructure projects in Kenya. Key factors included technical capacity, community involvement during project design and implementation, political influences, monitoring and evaluation, and contractor payment delays. Findings ranked contractor payment delays, political influence, technical capacity, community involvement, and project monitoring in order of their contribution to time overruns. However, Okero's study overlooked critical aspects such as efficiency in fund disbursement by financing agencies and weather factors, both of which are particularly relevant in Kenya's context, given the recurrent delays in public project financing. Moreover, it did not analyze how the identified factors influenced the relationship between infrastructure financing and project success. This study addresses this gap by integrating external environmental factors and directly linking them to infrastructure financing and project success under Kenya's Vision 2030.

Musa et al. (2015) examined the success of public housing projects in Nigeria, focusing on political, economic, and social factors. These included variables such as stable political environments, government support, financing guarantees, legal frameworks, credit facilities, and contractor consultations. Using a purposive sampling technique, they surveyed 550 construction professionals and analyzed data using Structural Equation Modeling (SEM). While Musa et al. found all three environmental factors to be significant in influencing public housing project success, the study did not consider infrastructure financing mechanisms as a variable, nor did it assess how these factors impacted the relationship between financing and project success. This study fills that gap by explicitly focusing on the influence of external environmental factors—such as political stability and governance—on infrastructure financing and the success of public capital projects in Kenya.

Ishtiaq and Jahanzaib (2017) explored the influence of project complexity and environmental factors on the success of oil and gas projects in Pakistan. They considered variables such as political, governance, cultural, social, economic, and physical location factors. Using SEM and Confirmatory Factor Analysis (CFA), they concluded that project complexities and external environmental factors significantly influenced project success in terms of quality, cost, and time. However, like Musa et al., their study did not address the role of infrastructure financing mechanisms. Additionally, while their findings highlighted the importance of external environmental factors, they lacked a discussion on how these variables might interact with infrastructure financing to influence project outcomes. Drawing on parallels between Kenya and Pakistan, such as political instability and governance challenges, this study extends their work by explicitly assessing the mediating role of external environmental factors in the relationship between infrastructure financing and project success.

Across these studies, a shared emphasis on external environmental factors—political, economic, and social—is evident. However, there are notable differences in scope and application. For instance, while Musa et al. (2015) and Ishtiaq and Jahanzaib (2017) demonstrate the importance of stable political environments and governance in Nigeria and Pakistan, respectively, these studies omit a critical examination of infrastructure financing. Similarly, Okero (2011) provides valuable insights into the Kenyan context but falls short of linking external environmental factors and financing mechanisms. This study bridges these gaps by combining these perspectives, offering a comprehensive analysis of the mediating role of external factors on infrastructure financing and project success in Kenya.

Political influences in Nigeria and Pakistan, as observed by Musa et al. (2015) and Ishtiaq and Jahanzaib (2017), parallel Kenya's challenges, where governance issues, political interference, and corruption significantly impact project outcomes. For example, the unstable political environment in Kenya during election periods mirrors similar patterns in Nigeria, where political instability disrupts project implementation. Likewise, financing guarantees and access to credit facilities are challenges faced in both Nigeria and Kenya, albeit with different intensities due to varying economic conditions. By contextualizing these findings within Kenya's Vision 2030 projects, this study underscores the importance of governance frameworks and robust risk management strategies tailored to Kenya's socio-economic and political realities. In conclusion, this study builds on prior research by integrating infrastructure financing mechanisms with external socio-economic and political factors to explain the success of public capital projects in Kenya. This

approach not only addresses gaps in the literature but also provides critical insights into enhancing the implementation of Vision 2030 projects.

3.0 MATERIALS AND METHODS

This study adopted a positivist approach, where quantitative data were collected, and hypotheses tested to form conclusions and generalizations. The study started by expressing the cost overruns in model 1 as a function of infrastructure financing and external environment factors and their interactions as follows:

$$SICPcost_i = \beta_0 + \beta_1 IF_i + \beta_2 EE_i + \beta_3(IF_i * EE_i) + \varepsilon - \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. 1$$

Where $SICPcost_i$ is the cost overrun of the ith public capital project, computed as the difference between the final cost of a project and its initially estimated cost in local currency (Kenya shillings). IF_i is the infrastructure financing variable of the ith public capital project that is measured as a categorical variable. It assumes

$$IF_i = \begin{cases} 1, & \text{if the project was fully financing through internal funds} \\ 2, & \text{if the project was fully financing through external funds} \\ 3, & \text{if the project was fully financing through PPP} \end{cases}$$

EE_i = is the components of external environment such as Efficiency of Funds Disbursement; Community Acceptance; Political Influences; and Weather Factors. β_0 = is the intercept term; β_1 is the coefficient for infrastructure financing mode. β_2 = is the coefficient for implementing capacity components.

β_3 = is the coefficient between mode of infrastructure financing and the variable of the component of external environment. It measures the influence of the mode of infrastructure financing on cost overruns changes due to ith external environment variable; and ε_1 = error term for cost overruns.

For the time overrun, it was approximated by model 2

$$SICPtime_i = \beta_0 + \beta_1 IF_i + \beta_2 EE_i + \beta_3(IF_i * EE_i) + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. 2$$

Where $SICPtime_i$= is the is the time overrun of the ith public capital project, computed as the difference between the actual completion time of the public capital project and the initially planned completion time in months. β_3 = is the coefficient for the interaction between infrastructure financing mode and external environment variable. It measures how the effect of infrastructure financing mode on time overruns changes with implementation capacity components. The rest of the variables are as defined in equation 1.

The above Models were analyzed using time series data collected over ten years, covering the period of implementation of MTP I and MTP II capital projects. The analysis, however, focused on the relative performance of each project employing descriptive cross-sectional research design to infer population characteristics and examine the relationships between dependent and independent variables. The data analysis used descriptive statistics, factor analysis and multiple linear regression, to identify the correlation matrix between these variables. The study was based on the high-impact infrastructure projects that align with Kenya's Vision 2030, including projects drawn from the roads, energy, and water & sanitation sectors.

The study population were all the projects sourced from the published reports by agencies responsible for capital project implementation, constituting 526 from roads, 20 from power, and 91 from the water and sanitation sectors. The research applied a combination of purposive and random sampling techniques. Purposive sampling ensured broad geographic representation across Kenya, while random sampling within each sector minimized bias and enhanced the generalizability of the findings. Using Krejcie and Morgan's (1970) sampling technique, a sample size of 313 projects was determined consisting of 220 projects from the roads, 20 from the power, and 73 from the water and sanitation sectors. Respondents on external environment factors were purposive selected constituting all the project managers from the sampled projects for their independence and knowledge of the projects. Questionnaires were used to gather both the secondary and primary data. Secondary data questionnaires were used to gather for each project in the sample the cost overruns, time overruns, amounts of infrastructure financing including the various modes of financing. The primary data questionnaires used a 5 point Likert scale where 5 is the highest and 1 the lowest to assess the perception of the project managers for sampled projects on their views on how external environmental factors influenced the success or otherwise of these projects.

The primary data collected was tested for its adequacy and validity using Kaiser-Meyer-Olkin (KMO)'s measure of sampling adequacy (Field, 2000). The results of KMO measure of sampling adequacy showed that external environment had a KMO of 0.5586 which was more than the critical level of 0.5, indicating that the data was valid to undertake the analysis. Reliability of the research instruments used to collect data for the study were tested using the Cronbach's alpha coefficient, indicating Cronbach's alpha coefficient for the research instrument was 0.7859 which meets the reliability test of 0.7 (Cronbach, 1951, Gardner, 1995). The correlation matrix test showed that there was a negative correlation between external environment and cost overrun and positive one with the time overrun.

4.0 FINDINGS

Descriptive Statistics

Table 1 below gives the descriptive statistics analyzing the mean, variability and coefficient of variation as a measure of successful implementation of public capital projects in Kenya. As observed from the table, the mean on the overall cost overrun of the sampled public capital projects was approximately Kshs 496 million, and a standard deviation of Kshs 1.53 billion, depicting a high rate of unsuccessful projects implemented over the 10 year period from a cost overrun perspective. Among the three sampled sectors, the road sector had the highest unsuccessful projects cost overrun with a mean of Kshs 656 million and a standard deviation of 1.79 billion; the water and sanitation sector followed with a mean on cost overrun of Kshs 127 million and a standard deviation of Kshs 169 million; and energy sector with the lowest mean on cost overrun of Kshs 28.4 million and a standard deviation of 92,9. However in terms of risk measured using the coefficient of variation, the energy sector was noted to be most risky in terms with a coefficient of variation of 327.11 percent, followed by the road sector with a coefficient of variation of 308. 07 percent and the least were water and sanitation sector with a coefficient of variation of 133.07 percent. According to Larsen et al. (2016), Senouci et al. (2016), Adam et al. (2015), and Adam et al. (2017), the high risk posed by the high coefficient of variation indicates a high rate of

unsuccessful projects meaning with most of the projects completed at much higher cost than originally estimated or abandoned overall affecting the economic development of the country.

In the case of time overrun the study indicates an overall mean on time overrun of 12 months and a high standard deviation of 13 months and a coefficient of variation of 108.03 percent, meaning that the risk abandoned projects within the three sectors is quite high. The road sector, like in the case of cost overrun had the highest with a mean on time overrun of 12 months and a standard deviation of 14 months. The energy sector followed with a mean on time overrun of 10 months and a high standard deviation of 11 months. The water and sanitation sector was also not far from the rest as it had a mean on time overrun of 11 months and standard deviation of 9.5 months. In terms of risk the road sector had the highest with a coefficient of variation of 117.68 percent, followed closely by the energy sector with a coefficient of variation of 109.25 percent, and the least being the water and sanitation sector with a coefficient of variation of 71.19 percent. Despite that, the risk posed by the high coefficient of variation across all the sectors signifies a high risk of most of the projects either completed after lengthy delays, affecting the quality, or quite a number of them completely abandoned and thus affecting the achievement of Kenya's Vision 2030.

Table 1: Descriptive Statistics of Cost (Kshs Million) and Time (Months) Overruns

Sub-Variables	Statement	Mean	Standard Deviation	Coefficient of Variation (Percent)
Cost overrun	Road sector	656	1790	272.87
	Energy sector	28.4	92.9	327.11
	Water and sanitation sector	127	169	133.07
	Overall	**496**	**1530**	**308.47**
Time overrun	Road sector	12	14	117.68
	Energy sector	10	11	109.25
	Water and sanitation sector	11	9.5	71.19
	Overall	**12**	**13**	**108.03**

The results of the descriptive statistics assessing the influence of the external environment on the success of implementing Vision 2030 capital projects in Kenya were based on four variables: efficiency in disbursement of funds, community acceptance, political influence, and weather-related issues. The findings reveal critical insights into governance and financing inefficiencies that contribute to cost and time overruns, particularly in the road sector.

Efficiency in the disbursement of funds emerged as the highest-risk variable in influencing cost and time overruns. Delays or failures in the release of project funds by financing agencies often disrupted the procurement of materials, contractor payments, and overall project timelines. These inefficiencies are especially pronounced in the road sector, where projects often require significant upfront capital for land acquisition, materials, and equipment. The lack of streamlined financial management frameworks within Kenya's public sector further exacerbates these challenges, highlighting governance gaps in fiscal accountability and transparency. For example, delays in the

disbursement of funds have been linked to bureaucratic red tape and weak enforcement of financing agreements, which are common issues within the Kenyan context.

Community acceptance ranked as the second-highest risk factor, reflecting a high prevalence of community resistance due to inadequate stakeholder engagement, delayed compensation, or failure to meet community expectations. The road sector, in particular, faces challenges related to land acquisition, where disputes over compensation often lead to project delays. Governance inefficiencies in addressing community grievances and the lack of a comprehensive framework for stakeholder consultation have significantly hindered project implementation. Additionally, unresolved compensation claims create a ripple effect that disrupts timelines, further escalating costs due to prolonged delays.

Political influence was the third-highest risk variable, emphasizing the pervasive impact of governance challenges on Vision 2030 projects. In the road sector, political interference often manifests in the misallocation of resources, prioritization of politically motivated projects over critical infrastructure needs, and frequent changes in project leadership. These factors undermine the consistency and efficiency of project delivery. For example, political patronage and vested interests can lead to the awarding of contracts to incompetent contractors, further compounding cost overruns and delays. These findings align with similar challenges observed in Nigeria and Pakistan, where political instability and governance inefficiencies significantly affect infrastructure projects.

Weather-related issues were found to be the least risky among the four variables, although certain factors within this category—such as the need to protect project materials and equipment—still posed significant challenges. In the road sector, adverse weather conditions, such as heavy rains or droughts, often lead to damage to construction materials, erosion of work sites, and delays in project completion. These risks are further aggravated by the lack of adequate contingency planning and poor enforcement of weather-adaptive construction practices.

The road sector exhibits the highest cost and time overruns due to a combination of governance and financing inefficiencies. The complex nature of road construction projects—requiring significant capital, extensive land acquisition, and technical expertise—makes them particularly vulnerable to delays in fund disbursement and political interference. Moreover, weak institutional capacity to manage financial flows and enforce accountability often leads to mismanagement and corruption, further inflating project costs. For example, inadequate pre-project feasibility studies and poor contract management practices contribute to frequent budget escalations. By linking these findings to Kenya's Vision 2030 agenda, this analysis underscores the critical need for governance reforms and the establishment of robust financial management systems to mitigate risks and enhance project delivery. Streamlining fund disbursement processes, improving stakeholder engagement, and insulating infrastructure projects from political interference are essential steps toward achieving timely and cost-effective implementation of capital projects.

Regression Analysis

To assess the influence that external environment has on the relationship between the infrastructure financing and the success of implementation of public capital projects in Kenya, analysis was undertaken using multiple linear regression method analyzed in Table 2 below. From the model the coefficients of determination (R^2) for cost and time overruns were 0.0164 and 0.0106 or 1.64 percent and 1.06 percent, respectively, which indicated virtually no explanatory power. In other

words, the exogenous variables could only explained 1.64 percent and 1.06 percent of the changes in the success of implementation of public capital projects in Kenya with respect to cost and time overruns, in that order. That is, 98.36 percent of cost overrun, and 98.94 percent of time overrun were due to other variables not considered in this model. This mean that there were other variables not considered under the external environment variables, which explained the aggregate amounts assessed on both the cost and time overruns.

Table 2: Regression Results on Infrastructure Financing, External Environment and Cost and Time Overruns

	Cost Overrun			Time Overrun		
	IF	EE	IF*EE	IF	EE	IF*EE
Coefficients	9.36×10^7***	-2.57×10^6***	2.58×10^7***	0.2628***	0.6994***	-0.0370***
Constant	5.43×10^8***	--		0.0067***	--	--
R-squared	0.0164	--	--	0.0106	--	--
t-value	90.52	-4.68	64.97	29.96	149.18	-10.83
p-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

As shown in Table 2 above, both models for cost and time overruns were significant since the p-value of 0.000 in both cases was less than α–value of 0.05 and infrastructure financing and external environment were significant in both cases because the p-value was less than α–value of 0.05. Consequently, this shows that the external environment significantly moderated the relationship between infrastructure financing and success of public capital projects in Kenya. The predictive equation for cost overrun was, therefore;

$$SCIPcost = 543{,}000{,}000 + 93{,}600{,}000IF - 2{,}570{,}000EE + 25{,}800{,}000IF * EE,$$

meaning that holding all other factors constant, if infrastructure financing goes up by one unit, then the success of implementing public capital projects in Kenya will, on average, decrease by Kshs 93.6 million units. Conversely, if the external environment go up by one unit, the success of public projects will, on average increase by Kshs 2.6 million units and if infrastructure and external environment were increased by one unit, the success of public projects, would on average, decrease by Kshs 25.8 million units.

The predictive equation for time overrun was that

$$SCIPtime = 0.0067 + 0.2628IF + 0.6994EE - 0.037IF * EE$$

meaning that holding all other factors constant, if infrastructure financing goes up by one unit, then the success of implementing public capital projects in Kenya will, on average, decrease by 0.2628 month units; if external environment goes up by one unit the success of public projects will, on average decrease by 0.6994 month units; and if infrastructure and external environment were increased marginally, the success of public projects, would on average, go up by 0.037 month units.

5.0 CONCLUSION AND RECOMMENDATIONS

The study concludes that the implementation of Vision 2030 capital projects in Kenya has been significantly affected by cost and time overruns, largely influenced by external environmental factors. These factors include inefficiencies in fund disbursement, community resistance, political interference, and weather-related challenges. The findings suggest that the external environment plays a mediating role between infrastructure financing and the successful delivery of these projects. Addressing these challenges is critical for Kenya to achieve its Vision 2030 developmental goals, particularly the establishment of a robust infrastructure network to support economic growth and competitiveness.

Moreover, these findings have broader implications for other developing countries that face similar challenges in public infrastructure development. Governance inefficiencies, political interference, and vulnerability to climatic conditions are common issues that undermine the success of infrastructure projects in many nations. By adopting targeted measures to mitigate these risks, countries can enhance project outcomes and align with their developmental objectives.

To address the negative influence of external environmental factors, the study recommends several interventions. First, the Government of Kenya and implementing agencies must strengthen governance frameworks to eliminate political interference. Projects should be prioritized based on their alignment with Vision 2030 objectives, ensuring they are derived from national development plans. Transparent tendering processes must be adhered to, free from political influence, to guarantee competency-based contract awards. Additionally, independent oversight bodies should monitor project selection, tendering, and implementation, ensuring accountability and reducing opportunities for corruption.

Second, to safeguard against weather-related risks, contractors and implementing agencies should incorporate climate-resilient practices at all stages of project development. Potential weather effects should be factored into project design and bidding processes, while resilient construction materials and techniques should be prioritized. Proper storage and protection of materials and equipment during construction are also essential. Although weather-proofing measures require significant upfront investment, their integration into initial project cost estimates and financing agreements can enhance feasibility. These measures align with Vision 2030's emphasis on sustainable infrastructure development, ensuring long-term resilience.

Third, community engagement and stakeholder participation should be enhanced to address community-related risks. Implementing agencies must conduct robust consultations with affected communities during the project design phase to identify and address concerns proactively. Timely and fair compensation should be provided to minimize resistance, and wayleaves must be secured before project commencement. By fostering trust and collaboration, these measures can reduce project delays and cost escalations, contributing to the successful delivery of Vision 2030 capital projects.

Fourth, improving the efficiency of financing and fund disbursement is critical. The government should negotiate financing agreements with clear, enforceable conditions to prevent delays in fund access. Establishing dedicated project accounts can ensure that funds are readily available and protected from diversions, while independent audits can monitor fund utilization to enforce accountability. Addressing inefficiencies in fund disbursement will enhance project efficiency and support the realization of Vision 2030's infrastructure goals.

Finally, the findings from this study can be applied to other developing countries experiencing similar challenges. Countries with weak governance frameworks, inadequate financing mechanisms, and climatic vulnerabilities can benefit from strategies such as investing in institutional capacity building to improve governance and reduce corruption, integrating climate-resilient practices in project planning, enhancing community engagement, and streamlining financing agreements. By adopting these approaches, developing countries can address systemic challenges, reduce inefficiencies, and achieve sustainable infrastructure development that aligns with their broader developmental goals.

In summary, tackling governance inefficiencies, managing risks associated with the external environment, and enhancing community and stakeholder engagement are crucial for improving the success of Vision 2030 capital projects in Kenya. These recommendations not only provide a pathway for Kenya's development but also offer insights for other nations with similar challenges in public infrastructure development.

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